Managing Food Chain Risk: How Best To Handle Uncertainty

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RELU-Risk

Rural Economy and Land Use Programme

Introduction and Project Objectives

The main aim of the RELU-RISK project is to develop better ways of communicating uncertainties around food risks to different stakeholders, including members of the public. Uncertainty not only needs to be handled within technical risk assessments but also needs to be understood within the two-way interaction with various stakeholders, ranging from specialist risk managers to members of the public.

The project will develop interactive web-enabled tools for quantitative assessment of risks and uncertainty, using the best available modelling of technical risk assessments, together with measures of the uncertainties in those risk estimates. It will also use participatory methods to ensure web-enabled tools, etc. are appropriate for stakeholders.

The project also aims to develop methods to predict consumer behaviour driven by perceptions of risk and uncertainty, with the help of social science inputs on participation processes, consumer behaviour and effective risk communication. The best ways of communicating risks both to members of the public and other stakeholders will be investigated and stakeholder groups will be involved both to define the interfaces and processes needed and to evaluate the outcomes from the project in order to develop improved methods for communicating with stakeholders.

The project will be centred around three case studies representing different types of risk: chemical contamination, microbial contamination and a crisis scenario.
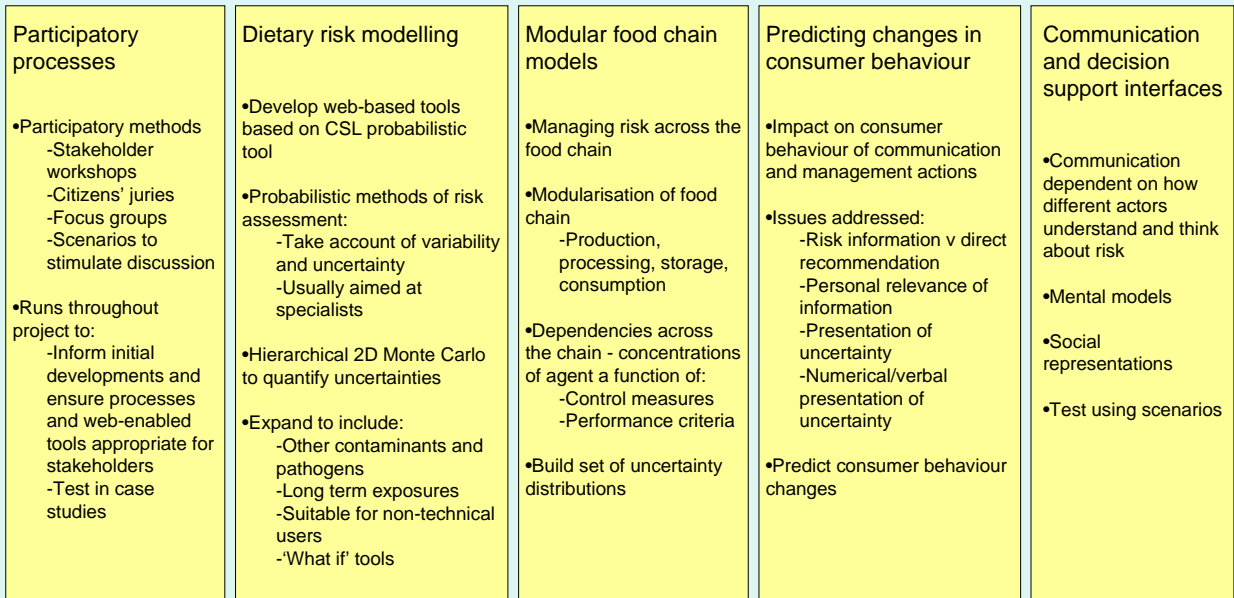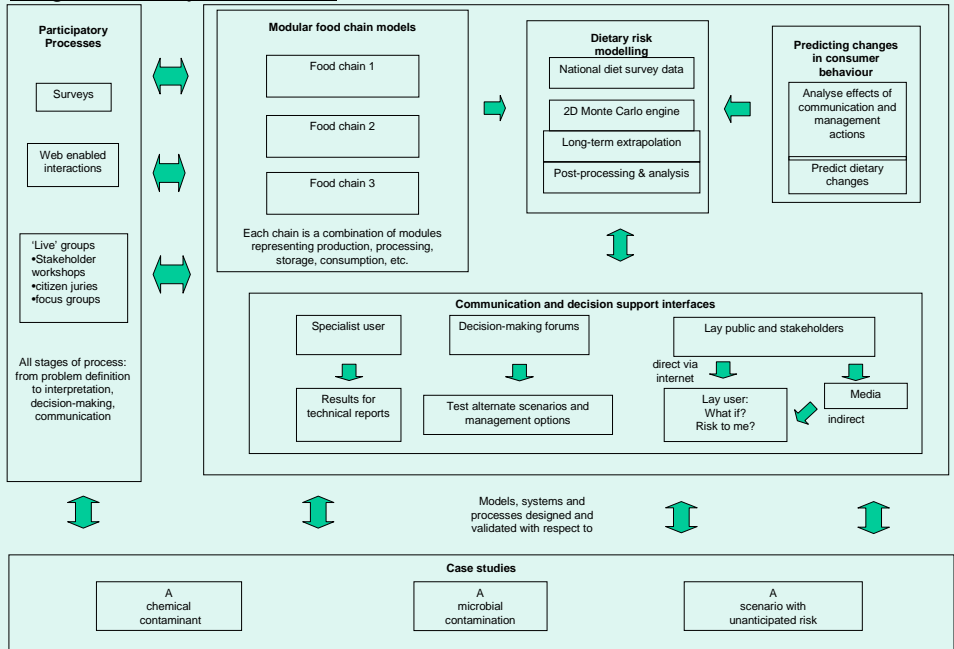
Diagram of Project Modules

Participatory processes

•Participatory methods
 -Stakeholder workshops
 -Citizens' juries
 -Focus groups
 -Scenarios to stimulate discussion

•Runs throughout project to:
 -Inform initial developments and ensure processes and web-enabled tools appropriate for stakeholders
 -Test in case studies

Dietary risk modelling

•Develop web-based tools based on CSL probabilistic tool

•Probabilistic methods of risk assessment:
 -Take account of variability and uncertainty
 -Usually aimed at specialists

•Hierarchical 2D Monte Carlo to quantify uncertainties

•Expand to include:
 -Other contaminants and pathogens
 -Long term exposures
 -Suitable for non-technical users
 -'What if' tools

Modular food chain models

•Managing risk across the food chain

•Modularisation of food chain
 -Production, processing, storage, consumption

•Dependencies across the chain - concentrations of agent a function of:
 -Control measures
 -Performance criteria

•Build set of uncertainty distributions

Predicting changes in consumer behaviour

•Impact on consumer behaviour of communication and management actions

•Issues addressed:
 -Risk information v direct recommendation
 -Personal relevance of information
 -Presentation of uncertainty
 -Numerical/verbal presentation of uncertainty

•Predict consumer behaviour changes

Communication and decision support interfaces

•Communication dependent on how different actors understand and think about risk

•Mental models

•Social representations

•Test using scenarios

Case study 1

Chemical - pesticide
 -Data available
 -Amenable to probabilistic modelling

Case study 2

Microbiological - cross contamination with campylobacter
 -Undercooked chicken
 -Mainly caused by cross contamination

Case study 3

Scenario with unanticipated risk
 -Hypothetical scenarios
 -Rapid response

http://www.relu-risk.org.uk